**NATURAL RESOURCES CONSERVATION SERVICE**
**MONTANA CONSERVATION PRACTICE SPECIFICATION**

# RESTORATION OF RARE OR DECLINING NATURAL COMMUNITIES (ACRE)

## CODE 643

**DEFINITION:** Reestablishment of abiotic (physical and chemical) and biotic (biological) conditions necessary to support rare or declining natural assemblages of native plants and animals.

**GENERAL:** This specification provides direction in reestablishing historic native plant communities to address concerns of degraded plant condition and/or inadequate wildlife habitat.

The U.S. Department of Interior, National Biological Service and the U.S. Department of Agriculture, Natural Resources Conservation Service in Montana have identified several rare or declining native vegetative community types in Montana:

- Fescue grasslands in the valleys of western Montana
- Sagebrush steppe in southwest and central Montana
- Old growth ponderosa pine (*Pinus ponderosa*) forests
- Northern mixed grass prairie of the Brown Glaciated Plains
- Northern mixed grass prairie of the Northern Dark Brown Glaciated Plains
- Riparian forests
- Hardwood draws
- Glacial pothole ponds
- Peatlands
- Aspen
- Mesic habitats (wet areas such as wet meadows, springs, seeps, swales)

### COMMUNITY TYPE DESCRIPTION AND LOCATION IN MONTANA

The following is a brief description of each community type and where it applies in Montana. Refer to the Montana Major Land Resource Units map in the Field Office Technical Guide (FOTG), Section I, Maps, Management Reference Maps.

**Fescue grasslands in the valleys of western Montana:**

These plant communities are dominated by Idaho fescue (*Festuca idahoensis*) rough fescue (*Festuca campestris*), bluebunch wheatgrass (*Pseudoroegneria spicata*), lupine (*Lupinus* spp.), and fringed sagewort (*Artemsia frigida*). They are located in Major Land Resource Units 44-I, 44-IA, and 44-II (Northern Rocky Mountain Valleys).

**Sagebrush steppe in southwest and central Montana:**

These plant communities are dominated by big sagebrush (*Artemisa tridentata*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), green needlegrass (*Nassella viridula*), prairie junegrass (*Koeleria macrantha*), shrubby cinquefoil (*Pentaphylloides floribunda*), and various milkvetches (*Astragalus* spp.). They are located in Major Land Resource Units 44-III, 44-IV (Northern Rocky Mountain Valleys), 46-III, and 46-IV (Northern Rocky Mountain Foothills).

**Old growth ponderosa pine (*Pinus ponderosa*) forests:**

In many areas of the Montana Rockies, the first forest zone above the grassland is the ponderosa pine (*Pinus ponderosa*) climax series. This species endures dry, warm environments usually less than 5,500 feet in elevation. Associated plant communities are bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), needleandthread (*Stipa comata*), sedge (*Carex* spp.), Oregongrape (*Mahonia repens*), Rocky Mountain juniper (*Juniperus scopulorum*), and common snowberry

(*Symphoricarpos albus*) in the understory. These ponderosa pine climax communities are found in Major Land Resource Units 44-I, 44-IA, 44-II (Northern Rocky Mountain Valleys), 46-III, 46-IV (Northern Rocky Mountain Foothills), 58A-VII, 58A-VIII, 58A-IX, 58A-X (Northern Rolling High Plains), and 60A, 60B (Pierre Shale Plains).

**Northern mixed grass prairie of the Brown Glaciated Plains:**

These plant communities are dominated by bluebunch wheatgrass (*Pseudoroegneria spicata*), green needlegrass (*Nassella viridula*), western wheatgrass (*Pascopyrum smithii*), needleandthread (*Stipa comata*), milkvetch (*Astragalus* spp.), scurfpea (*Pediomelum* spp.), big sagebrush (*Artemisa tridentata*), and winterfat (*Krascheninnikovia lanata*). They are located in Major Land Resource Units 52-IV, 52-V, and 52-VI (Brown Glaciated).

**Northern mixed grass prairie of the Northern Dark Brown Glaciated Plains:**

These plant communities are dominated by western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), needleandthread (*Stipa comata*), little bluestem (*Schizachyrium scoparium*), silver sagebrush (*Artemisia cana*), winterfat (*Krascheninnikovia lanata*), fringed sagewort (*Artemisia frigida*), and American vetch (*Vicia americana*). They are located in Major Land Resource Unit 53A (Northern Dark Brown Glaciated Plains).

**Riparian forests:**

These plant communities are dominated by plains cottonwood (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), black cottonwood (*Populus trichocarpa*), willow (*Salix* spp.), and green ash (*Fraxinus pennsyvanica*) climax series. Associated plant communities are redosier dogwood (*Cornus stolonifera*), western snowberry (*Symphoricarpos occidentalis*), American plum (*Prunus americana*), silver buffaloberry (*Shepherdia argentea*), western yarrow (*Achillea millefolium*), western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), prairie cordgrass (*Spartina pectinata*), and basin wildrye (*Leymus cinereus*). These riparian forests are located along the major streams, rivers, and their tributaries across Montana.

**Hardwood draws:**

Hardwood draws support the green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), and American elm (*Ulmus americana*) plant community types. Associated plant communities in the understory are common snowberry (*Symphoricarpos albus*), western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), common chokecherry (*Prunus virginiana*), and Woods' rose (*Rosa woodsii*). They are located in Major Land Resource Units 53A (Northern Dark Brown Glaciated Plains), 58A-VII, 58A-VIII, 58A-IX, 58A-X (Northern Rolling High Plains), and 60B (Pierre Shale Plains).

**Glacial pothole ponds:**

Glacial potholes are depressional wetlands, which occur on the northern plains of Montana and in the intermountain valleys of Montana. The depressional wetlands of the northern plains are commonly known as prairie potholes. Prairie potholes were formed by the retreat of the continental glaciers during the Pleistocene epoch. Intermountain depressions were formed by the retreat of montane glaciers. Intermountain potholes are geomorphically and vegetatively similar to prairie potholes. Plant communities that occur in depressional wetlands tend to occur in rings or zones based on the duration of saturation and inundation. A semi-permanent pothole would have a full complement of plant zones. From the outer edge these zones are:

**Low prairie** – dominated by upland species such as Baltic rush (*Juncus balticus*) and western wheatgrass (*Pascopyrum smithii*).

**Wet meadow** – dominated by aquatic graminoids such as sedges (*Carex* spp.), rushes (*Juncus* spp.), spikerushes (*Eleocharis* spp.) and hydrophitic grasses such as reedgrass (*Calamagrostis* spp.) and mannagrass (*Glyceria* spp).

**Shallow marsh** – dominated by water tolerant graminoids such as sedges (*Carex* spp.), bulrushes (*Scirpus* spp.) and cattails (*Typha* spp).

**Deep marsh** – dominated by true aquatics such as pond weed (*Potomogeton* spp).

A shallow pothole might only have a low prairie and wet meadow zones. A deep, steep sided pothole might exhibit all the zones, but these would be extremely compressed. These wetlands are located in Major Land Resource Units 52-IV, 52-V, and 52-VI (Brown Glaciated Plains), 53A (Northern Dark Brown Glaciated Plains) for prairie potholes and Major Land Resource Units 44-I, 44-IA, and 44-II (Northern Rocky Mountain Valleys) for intermountain potholes.

**Peatlands:**

The majority of peatlands in Montana are found west of the continental divide. The most common type of peatland found in Montana is a fen. Fens are peat accumulating wetlands. Water sources are both surface and groundwater. Fens are generally classified as poor fens or rich fens. Poor fens have a low pH. Rich fens have a higher pH. These communities are located in Major Land Resource Units 44-I, 44-IA, and 44-II (Northern Rocky Mountain Valleys).

**Poor fens** – dominated by sphagnum mosses (*Sphagnum spp.*). Typical vascular plant communities include water sedge (*Carex aqualtilis*), blister sedge (*Carex vesicaria*), and silvery sedge (*Carex canescens*). Typical grasses are bluejoint grass (*Calamagrostis canadensis*) and tufted hairgrass (*Deschampsia cespitosa*). Typical shrubs include small leafed laurel (*Kalmia microphylla*), bog laurel (*Ledum glandulosum*) and huckleberry (*Vaccinium spp.*).

**Rich fens** – dominated by brown mosses (*Brynum spp., Campylium spp.*). Typical vascular plants include woolly fruitsedge (*Carex lasiocarpa*), Northwest Territory sedge (*Carex utriculata*), yellow sedge (*Carex flava*) and spikerushes (*Eleocharis spp.*). Typical woody plants include Drummond willow (*Salix drummondiana*), Bebb's willow (*Salix bebbiana*), bog birch (*Betula glandulosum*), and mountain alder (*Alnus incana*).

**Aspen:**

In Montana, aspen (*Populus tremuloides*) is primarily a seral tree species which is maintained by periodic fires. Because of fire suppression and over-browsing, by both wildlife and livestock, Montana has lost an estimated 64% of its aspen groves. Aspen provide the highest biodiversity of any forest habitats except streamside riparian areas. Aspen groves are dominated by aspen and a wide variety of low shrubs like common strawberry (*Symphoicompos albus*) and rose (*Rosa* spp.), grasses, and tall forbs. Aspen occurs across the state.

**Mesic habitats:**

Mesic habitats are wet areas such as wet meadows, springs, seeps, and swales. Mesic habitats refer to land with a well-balanced supply of moisture throughout the growing season. As summer heat dries out soils in uplands, mesic areas provide wetter, greener areas of herbaceous vegetation that stay productive longer into the summer than surrounding uplands. Mesic areas provide important wildlife habitat by supplying more reliable late-season water availability and forage production. Mesic habitats provide protein-rich forb and insect foods for many wildlife species. Mesic habitats occur across the state.

## RESTORATION RECOMMENDATIONS

Only high quality and ecologically adapted native seed and plant material will be used. Seeding rates and species mixtures will be adequate to accomplish the planned purpose.

Native species, which represent the plant community to be restored, will be seeded in diverse mixtures. No introduced species will be seeded.

Species suited for the site will be based on site descriptions in the Field Office Technical Guide, Section II-E-8, or Section II, Ecological Site Descriptions. Select cultivars of species adapted to the soils, mean annual rainfall, and geographic area.

Site preparation shall be sufficient for establishment and growth of selected species. Planting success depends on removal of competition, species selection, seed placement, and protection of seedlings.

Proper management practices will be incorporated to ensure the native plant communities are maintained. Management measures will control invasive species and noxious weeds in order to comply with noxious weed laws.

For the following vegetative habitats, refer to the FOTG, Section IV, Standard and Specification, Range Planting (Code 550) for management guidance. Refer to the FOTG, Section II-E-8, or Section II, Ecological Site Descriptions, to find the appropriate technical range site description for specifics on percent composition (% grass, % forbs, % shrubs) and the species composition of that restored climax plant community.

- Fescue grasslands in the valleys of western Montana;
- Sagebrush steppe in southwest and central Montana;
- Northern mixed grass prairie of the Brown Glaciated Plains; and
- Northern mixed grass prairie of the Northern Dark Brown Glaciated Plains.

**Old growth ponderosa pine (*Pinus ponderosa*) forests:**

Refer to the FOTG, Section IV, Standards and Specifications, Tree/Shrub Establishment (Code 612) for guidance on spacing distances and Range Planting (Code 550) for management guidance. Refer to the FOTG, Section II-E-8, or Section II, Ecological Site Descriptions, to find the appropriate technical range site description for specifics on percent composition (% grass, % forbs, % shrubs) and the species composition of that restored climax plant community.

**Riparian forests:**

Refer to the FOTG, Section IV, Standards and Specifications, Riparian Forest Buffer (Code 391) for guidance on species and spacing distances and Range Planting (Code 550) for management guidance. Refer to the FOTG, Section II-E-8, or Section II, Ecological Site Descriptions, to find the appropriate technical range site description for specifics on percent composition (% grass, % forbs, % shrubs) and the species composition of that restored climax plant community.

**Hardwood draws:**

For hardwood draws refer to the FOTG, Section IV, Standard and Specification, Riparian Forest Buffer (Code 391) for guidance on species and spacing distances. Refer to the FOTG, Section IV, Standard and Specification, Range Planting (Code 550) for management guidance. Refer to the FOTG, Section II-E-8, or Section II, Ecological Site Descriptions, to find the appropriate technical range site description for specifics on percent composition (% grass, % forbs, % shrubs) and the species composition of that restored climax plant community.

**Glacial pothole ponds and Peatlands:**

Restoration of glacial pothole ponds and peatlands requires reestablishment of the original hydrology. Wetland plant communities generally establish from natural sources once the hydrology has been restored. No plantings and/or seedings are recommended unless determined by an on-site evaluation. The restored climax plant community should contain those species listed in the *Community Type Description and Location in Montana* section of this specification. Adjacent uplands will be restored to native mix or declining habitat as appropriate.

**Aspen:**

Aspen stands often require thinning as a restoration action to promote regeneration of degraded stands and persistence of healthy stands. A thinning action can remove competition and set back successional stage. Successful regeneration of aspen depends on hormonal stimulation of root buds to initiate vegetative regeneration by sprouting, maximizing the amount of sunlight available to aspen sprouts, and protection of sprouts from excessive browsing by livestock and wildlife to allow release of sprout cohorts above maximum browsing height. Hormonal stimulation of aspen root buds can result from cutting decadent aspen trees and from slight disturbance from mechanical harvesting of conifers. Decadent aspen and encroaching conifers establishing within aspen stands shade young aspen growing under the canopy of mature trees. Sunlight is a key factor for aspen maintenance and regeneration, and thinning increases the amount of sunlight available to aspen sprouts. Thinning decadent aspen and removing competing conifers can enhance the growth environment for aspen by restoring access to sunlight and soil moisture. Thinning can also improve the diversity of size-age structure in a stand.

**Mesic habitats**:

Sustainability of scarce water resources depends on conservation of mesic resources. Healthy mesic habitats act like sponges helping to capture, store, and slowly release water. Functioning meadows and floodplains capture and hold water in the soil, slowly releasing it after runoff events, sustaining continued base flows and maintaining higher water tables throughout the growing season. Restoration of degraded mesic habitats often requires active restoration for reestablishment of the original hydrology. Active restoration can boost hydrologic function and productivity. Wetland plant communities generally can reestablish from natural sources on-site once hydrology has been restored. No plantings and/or seeding of herbaceous vegetation is recommended unless determined necessary by an on-site evaluation. Should re-vegetation be necessary, refer to FOTG, Section IV, Standard and Specification, Tree/Shrub Establishment (Code 612), Range Planting (Code 550), or Critical Area Planting (Code 342) for guidance.

In many degraded riparian areas, meadows, and swales, simple low-tech structures built by hand using rock or wood can be used to actively restore or enhance hydrologic function. These structures can be used to accelerate recovery of incised channels or halt head-cuts by reducing water velocities, increasing sediment deposition, initiating aggradation, improving hydrologic function, enhancing floodplain connectivity, and expanding riparian and wet meadow vegetation.

Refer to the FOTG, Section IV, Restoration of Rare or Declining Natural Communities (Code 643), Job Sheets MT643A Zeedyk Rock Structures and MT643B Beaver Dam Analogues. These structures are for remote rangeland settings isolated from downstream infrastructure. Zeedyk Rock Structures are appropriate for intermittent or ephemeral streams impacted by gully erosion with relatively shallow head cuts ≤4 feet tall. Beaver Dam Analogues are appropriate for small perennial streams (1$^{st}$ and 2$^{nd}$ order) that are wadable during low flow with a bank full width of 20 feet or less.

**REFERENCES**

US Department of the Interior–National Biological Service. 1995. Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation. Biological Report 28, February 1995.

USDA–NRCS. 2017. Mesic Habitat Conservation Planning Guide. Washington, D.C.